Exhibit B

Modifying the Region 2 DBS Plan

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SUMMARY

The ITU's Regional DBS Plans can be modified by agreement of those parties that may be affected or by a showing that a modification does not "affect" any other assignment. It is shown herein that the addition to the Region 2 Plan of an assignment of a beam to Panama originating from 61.3°W.L. would not "affect" the assignment of any other nation.

1. Introduction

In order to ensure that all nations will have access to orbit/spectrum resource suitable for the provision of direct broadcast of television from space (DBS), Regional Plans were established through the International Telecommunications Union (ITU) more than 10 years ago. These DBS Plans were incorporated into the international Radio Regulations (Appendix 30 (ORB-85)) and have the force of a treaty when ratified by the appropriate legislative body in each nation.

Although the Regional DBS Plans assign specific frequencies at specific geostationary orbit locations to each nation, the Plans recognize that in the course of time nations may wish to modify or add to their assignments in the Plan. Article 4 of Appendix 30 includes the overall regulatory provisions governing Plan modifications. Annex 1 of Appendix 30 includes most of the

technical criteria associated with assuring a modification to a Plan does not adversely "affect" the use of the spectrum by other nations.

2. Purpose of the Report

According to Article 4 of Appendix 30 there are two methods whereby modifications to the DBS Plans can be accomplished. One is to obtain the agreement of any nation whose services are considered to be "affected"[1] by the modification. The second method is to determine that as a result of the intended modification, the limits defined in Annex 1 (of Appendix 30) are not exceeded, which confirms that the services of other nations will not be "affected".

The purpose of this report is to present an analysis that shows a modification to the Region 2 DBS Plan, which adds a new frequency/orbit assignment for a nation, can be made that would not adversely "affect" the Plan assignments of other nations.

3. Modification Scenario to be Analyzed

The modification to the Region 2 Plan to be evaluated is to add a number of channels of DBS service for Panama from the 61.3°W.L. orbit location.

4. Analytical Method

The ITU staff has developed a computer program (MSPACE) that is used to evaluate whether a proposed modification to one of the Regional Plans will affect the assignments of other nations. This

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[1] Appendix 30 states that the assignment of a nation is affected when a modification causes the protection margin (or carrier-to-interference ratio) to be decreased by 0.25 dB below that inherent in the Plan.

program, like most others, provides results -- but little insight into the dynamics of intermediate calculations. Since the purpose of this report includes obtaining an understanding of the interference contributions due to the modification, the analysis used herein involves more classical carrier-to-interference (C/I) calculations.

The Regional Plans are based on several types of interference reduction techniques among the many assignments. They are:

- o Earth station discrimination - based on orbital separation of the assignments.
- o Coverage of different areas on the Earth - based on satellite antenna discrimination between Earth coverages.
- o Polarization isolation - based on satellite and earth station antenna characteristics.
- o Adjacent channel isolation.

The analysis herein relies primarily on the first two types of discrimination listed above.

5. Analysis

There are hundreds of frequency/orbit assignments in the Region 2 DBS Plan. Therefore the first step in the analysis was to reduce the number of assignments to those that would realistically be potential victims to harmful interference from the planned Panama beam from 61.3°W.L. This triage was conducted using a combination of the two sources of discrimination identified above, i.e., difference in earth station antenna angle (orbit longitude difference) and distance between coverage areas (satellite angle

difference). Thus, the selection of Plan assignments for detailed examination was based on a rough estimate that a combination of both earth station and satellite antenna discriminations would provide greater than 50 dB of protection for the receivers in the most vulnerable portion of the potential victim nation. The specific criteria were a combination of orbital location differences of less than about 14° and a separation of coverage on the ground of less than four (4) times the beamwidth of the new assignment. Moreover, for those nations, such as Brazil, where more than one beam assignment is at the same orbit location, only the most vulnerable beam was examined in detail.

This triage resulted in the list in Table 1. This Table also lists the results of calculations of the discriminations using the satellite and earth station antenna patterns (Figures 8 and 11 of Annex 5, which are reproduced here as Figures 1 and 2) of Appendix 30. Figure 3 shows the geographical relationships of the assignments in the list and includes the proposed beam for Panama.

Table 1 shows that on close examination the available total isolation from earth station and satellite antenna discrimination exceeds 53 dB for all assignments examined, except for service provided by the U.S. collocated beams at 61.3° and 61.7°W.L. Region 2 Plan assignments are based on achievement of a carrier-to-interference ratio (C/I) of 30 dB. According to Section 1 of Annex 1 of Appendix 30, service to a nation is considered "affected" if the change in its C/I (or overall protection margin) due to a modification exceeds 0.25 dB. Table 1 shows that, other than for

the U.S. beams at 61.3° and 61.7°W.L., the least discrimination available to any nation is 53.6 dB. This added interference due to the modification will cause a change to a C/I of 30 dB of only 0.02 dB, clearly below the limit where assignments to other nations would be affected.

Table 1 shows that the two primary discrimination methods provide only 32.6 dB of satellite antenna isolation for subscribers in Southern Florida to DBS service from 61.3°W.L employing co-polar transmissions. This level of discrimination would reduce the overall protection margin by about 1.9 dB, which the Plan defines as causing an "affect". However, it should be noted that this increase in C/I would cause only a 0.06 dB reduction in the Plan's C/N target of 14 dB. Such a decrease in signal quality would probably not be discernable to the human eye or ear. In addition, it now appears that all U.S. DBS licensees plan to use compressed digital television transmissions. Such service would be viable with a C/N of 10 dB. Thus, the projected decrease in C/I would cause only a 0.024 dB change in the C/N for compressed digital TV.

Moreover, the error correcting code planned for digital TV service will further reduce the visual effect of this already non-discernible increase in interference. Finally, DBSC's spacecraft vendor has indicated the spacecraft antenna to be used to create the Panama beam could be designed to lower the sidelobes in the direction of the U.S. by at least 10 dB below that of the antenna mask (Figure 1 herein) of the Region 2 Plan. Inclusion of this antenna state-of-art capability would by itself reduce the change

in C/I to U.S. subscribers so that the ITU would consider the U.S. assignments would not be affected by the proposed Panama beam. In addition, service to Florida subscribers of the U.S. DBS satellite at 61.7°W.L. would be even less affected because the Panama service would employ orthogonal polarization and the channels would be offset in frequency from those used for 61.7°W.L. These factors taken in combination with the improved antenna performance would assure that signals from 61.7°W.L. would not be "affected".

6. Conclusions

It has been shown that a modification to the Region 2 DBS Plan can be accomplished without "affecting" the assignments of other nations in the Plan.

	Earth Station Discrimination				Satellite Antenna Discrimination				Total
Beam Name	Orbit Location °W.L.	Delta Longitude (Degrees)	$\phi/\phi o$	E.S. Relative Gain (dB)	Satellite Antenna Angle (deg.)	ϕo	$\phi/\phi o$	Satellite Antenna Discrimination (dB)	Total Discrimination (dB)
ATNBEAM[1]	52.8	8.5	5.0	-31.5	1.7	1.0	1.7	-26.6	-58.1
ARGNORT5[2]	54.8	6.5	3.8	-28.6	5.8	0.8	7.0	-38.9	-67.5
GRD00059[3]	57.2	4.1	2.4	-23.6	2.7	1.0	2.7	-30.6	-54.2
B CE 511	64.2	2.9	1.7	-19.8	3.9	1.0	3.9	-33.8	-53.6
MEX 01SUR[4]	69.2	7.9	4.6	-30.7	1.5	0.9	1.8	-26.9	-57.6
B NO711[5]	74.0	12.0	7.5	-35.8	2.1	1.0	2.1	-28.4	-64.3
USAEH001	61.5	---	---	0	2.8	0.8	3.5	-32.9	-32.9

1/ Channels 2, 6, 10, 14, 18, 22, 26, 30 only, however, another beam assigning 8 channels for French Guyana is at the same location.
2/ Even numbered channels only.
3/ Channels 3, 7, 11, 15, 19, 23, 27, 31 only.
4/ Odd numbered channels only.
5/ Beam B NO 811 is at the same orbit location and the same discrimination is calculated.

D-PLAN.MOD

FIGURE 1

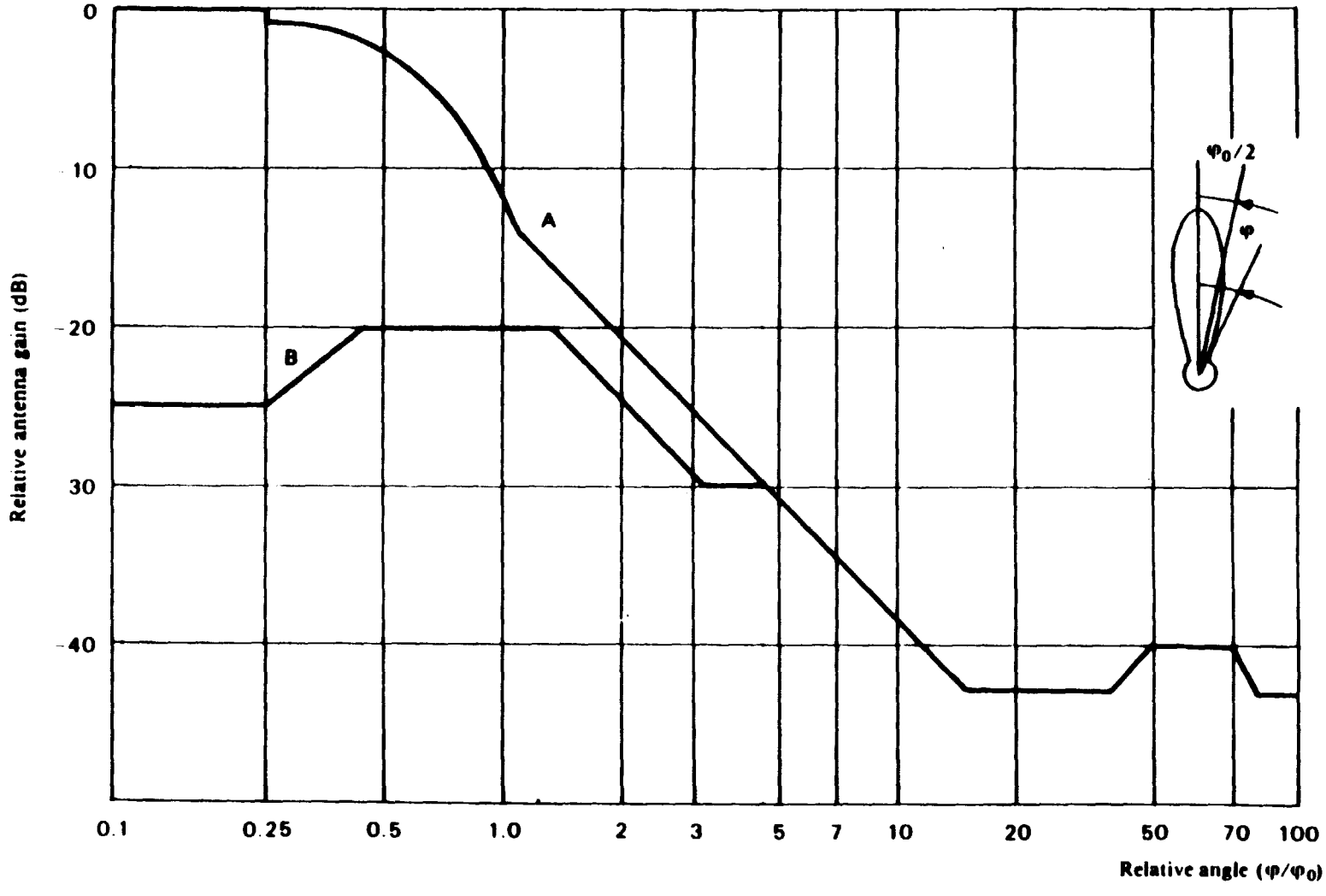


FIGURE 8

Reference patterns for co-polar and cross-polar components for receiving earth station antennas in Region 2

FIGURE 2

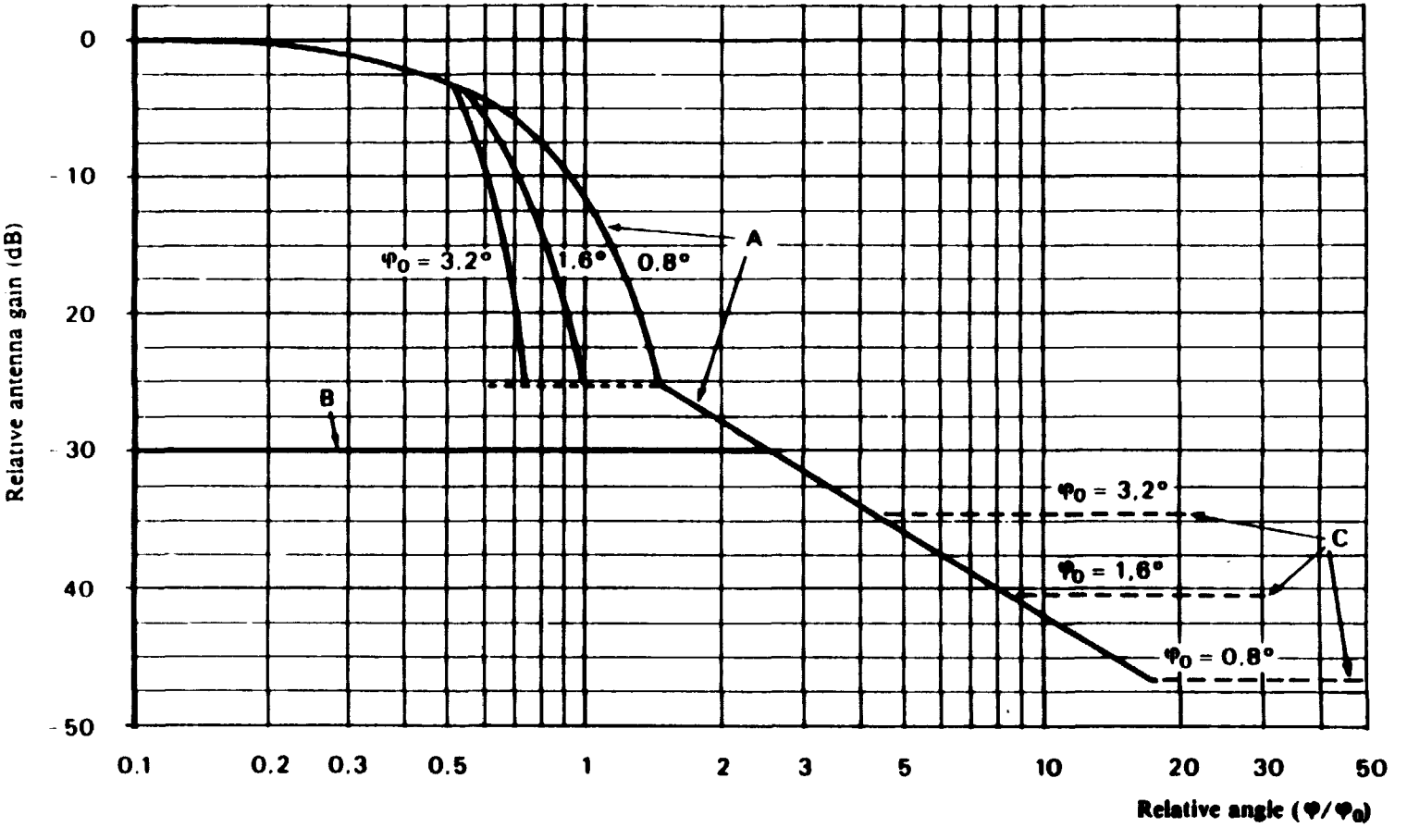
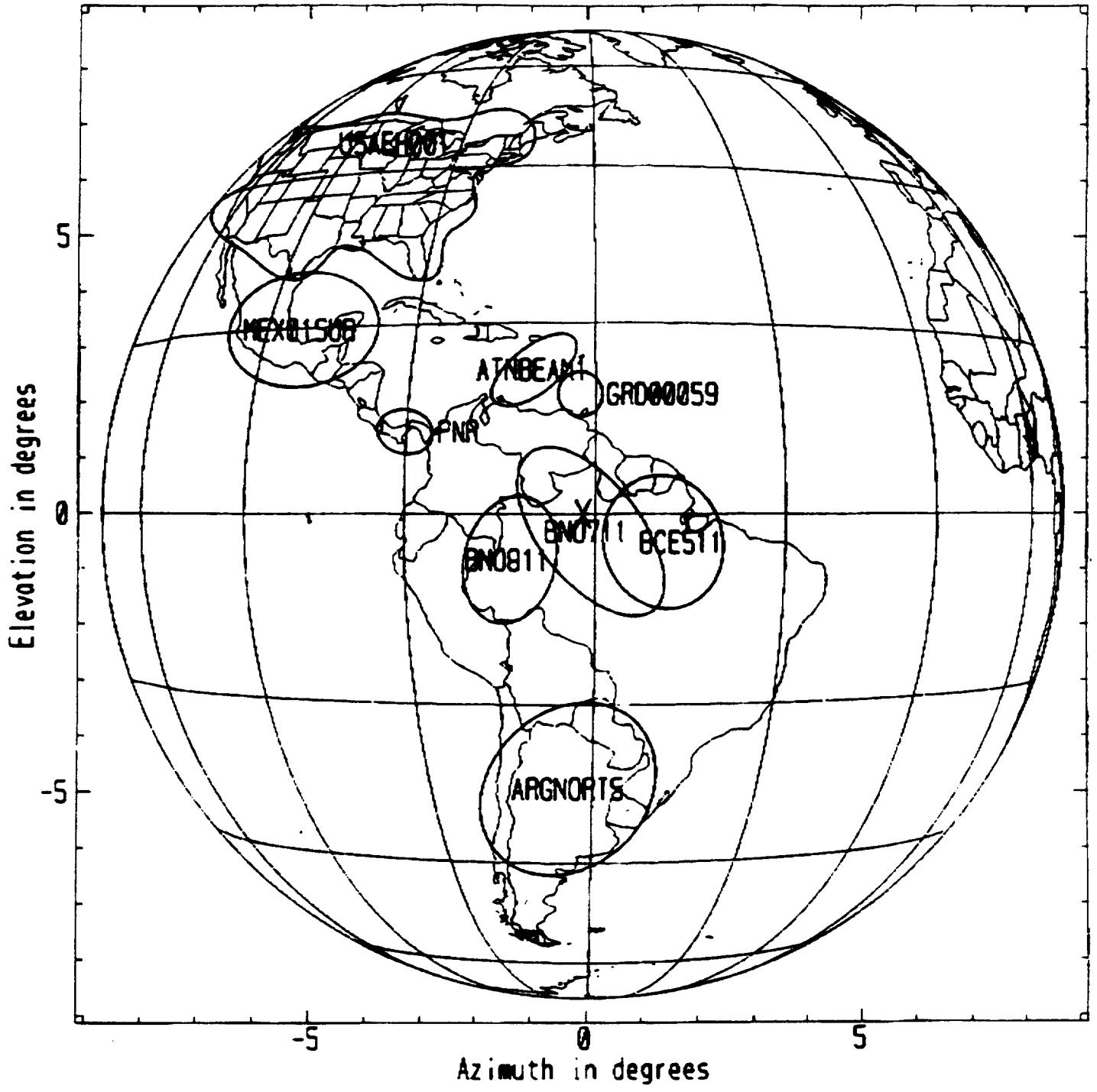


FIGURE 11

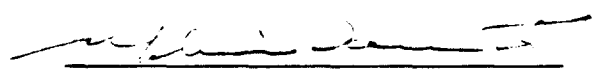
Reference patterns for co-polar and cross-polar components for satellite transmitting antennas with fast roll-off in the main beam for Region 2

FIGURE 3


5
0
-5
Elevation in degrees
-5
0
5
Azimuth in degrees
ATNBEAM1
GRD00059
PNR
BCE511
ARGNORTS

ENGINEERING CERTIFICATE

I hereby certify that I am the technically qualified person responsible for preparation of the engineering information contained in this report, that I am familiar with Parts 25 and 100 of the Commission's Rules as well as Appendix 30 of the International Radio Regulations, that I have either prepared or reviewed the engineering information submitted in the report, and, that it is complete and accurate to the best of my knowledge and belief.



Melvin Barmat

Date: September 7, 1994

CERTIFICATE OF SERVICE

I, Alisa K. Howard, a secretary in the law firm of Sullivan & Worcester, hereby certify that on this 8th day of September, 1994, I served a copy of the foregoing "Application For Authority To Provide International DBS Service" by placing a copy of the same, first class postage prepaid, in the United States Mail addressed to the following:

Robert Johnson
Dominion Video Satellite, Inc.
5551 Ridgewood Drive
Suite 505
Naples, FL 33963

Alisa K. Howard

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